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ABSTRACT

A questionnaire used in the assessment of medical school learning environments is described. Thirty-one statements drawn from the Medical School Environment Inventory, which reflected qualities desired in the clinical training environment, made up the questionnaire. The instrument was administered to fourth-year medical students at three clinical training sites. Statements were grouped into subscales representing structure, interpersonal relationships, educational climate, practicality, enthusiasm, and scientism-humanism. Comparisons were made between the elective environments at the three sites by performing univariate analyses of variance using the scale scores as dependent variables. Differentiation between clinical training sites is made possible by examining differences in student perceptions of the learning environment. It was found possible to distinguish between educational "sub-environments" within undergraduate medical education. Future research should focus on the interaction between perceptions of the learning environment and characteristics of the individual learner. The questionnaire is included. (DWH)

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Evaluation of Clinical Electives: Factors Differentiating Between Clinical Training Sites

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Binghamton and Syracuse, NY Campuses

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Evaluation of Clinical Electives: Factors Differentiating Between Clinical Training Sites

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One aspect of the medical curriculum which has received relatively little attention by medical educators has been that of clinical electives. This is indeed unfortunate, since the impact of these courses in "rounding-out" one's undergraduate medical education, providing additional preparation for post-graduate training, and assisting in career decisions, to name a few, have been documented in the literature (1,2,3)

The present study describes the evaluation of elective courses taken by students at a satellite clinical campus of one medical school. The clinical curriculum offered at this campus differs from that of the main campus in that it places an emphasis on both continuity of care and behavioral medicine within the context of a primary-care, community-based setting. The purpose of this evaluation was to assess the extent to which the learning environment provided by the elective curriculum was consistent with the community-based primary care orientation of the clinical curriculum of this campus.

The use of instruments designed to characterize medical school learning environments can be traced to Hutchins (4). Influenced by the work of Pace and Stern (5) and their development of the College Characteristics Index (CCI), Hutchins used a modified version of the CCI, which he refered to as the Medical School Environment Inventory (MSEI), to study differences in the learning environments of various medical schools. More recent studies have used a variety of measures of the learning environment in curriculum evaluation (6,7), to compare perceptions of the learning environment among faculty and students (8), assessing curricular change (9), and to identify sources of student stress (10)

Within the context of curriculum evaluation, measures of the learning environment have focused on relatively large segments of the medical curriculum, for example, a single year, several years, or even an entire four year curriculum. Approaching the assessment of medical school learning environments on such a large scale, as Hutchins (4) notes, ignores the possibility that different learning "sub-environments" may exist within the curriculum. It is with this potential in mind that the present study was undertaken.

METHOD

Individuals involved in the initial planning, design, and implementation of the clinical campus curriculum selected statements from the MSEI (4) which best reflected qualities desired in the clinical training environment. A total of 31 statements were selected for the final version of the instrument which was mailed to two cohorts (Classes of 1982 and 1983) of fourth-year medical students (N=77) who had attended the Clinical Campus, College of Medicine, State University of New York - Upstate Medical Center, and were enrolled in clinical electives at three different training sites. Each statement was rated on a four point scale (4= true; 3= more often true than not; 2 = more often false than not; 1 = false). A total of 67 students responded yielding a response rate of 87 percent.

Two of the sites included hospitals affiliated with the clinical campus (sites A and B). Site A consisted of three community hospitals in Binghamton, New York, the primary location of the clinical campus. Each of the three hospitals is in the 300 - 400 bed size range. Only one offered resident training. Site B was a 300 bed hospital and associated multi-specialty clinic located approximately 50 miles from the Binghamton area. This site also offered resident training. The third site was the main campus of the State University of New York Upstate Medical Center, College of Medicine, in Syracuse, New York. The clinical facilities associated with site C included a University Hospital, a 400 bed VA hospital, a 500 bed and two 350 bed affiliated community hospitals. Most of the institutions in this setting provided resident training.

Following a preliminary analyses of the data, statements (items) were grouped into six subscales representing: Structure (6 items); Interpersonal Relationships (5 items); Educational Climate (6 items); Practicality (4 items); Enthusiasm (4 items); and Scientism-Humanism (7 items). Table 1 summarizes the six subscales and the individual items included on each scale. Additional review of the subgroupings by curriculum designers provided evidence of the face validity of these scales. Estimates of the internal consistency reliability (Cronbach's alpha) were then obtained for each scale (Table 2) and found to range from .49 (Educational Climate) to .80 (Scientism-Humanism). Scores for each of the six scales were obtained by summing the individual items in the scale. Although minimal, missing data was estimated by substituting the sample mean in computing the scale scores.

Comparisons between the elective environments at the three training sites were made by performing univariate analyses of variance using the scale scores as dependent variables. Statistically significant findings were followed by Scheffe multiple comparisons.

RESULTS

Scale means, standard deviations, and intercorrelations are shown in Table 2. Table 3 presents the scale means for each of the three clinical training sites along with the univariate F-statistics. Results of the analyses of variance revealed statistically significant ($p < .05$) differences between training sites for three of the six scales: Structure, Interpersonal relations, and Educational Climate. Group differences on the Practicality scale approached the .05 level of significance ($P < .06$). No differences were found between training sites with respect to Enthusiasm or Scientism-Humanism.

Results of the Scheffe multiple comparisons indicated that one of the two community-oriented facilities (Site B) differed statistically on all four learning environment measures from those training facilities oriented more toward academic medicine (Site C). The second community-based facility (Site A) was found to have a more structured learning environment than Site C, however, with respect to Interpersonal Relationships, Educational Climate, and Practicality, mean differences between these two sites were not found. Comparisons between the two community-based hospitals (Sites A and B) revealed nonsignificant mean differences for Structure and Practicality of their learning environments, however, statistically significant differences were found on both the Interpersonal Relationships and Educational Climate scales.

DISCUSSION

Differentiation between clinical training sites is possible by examining differences in student perceptions of the learning environment. The present study found clinical training sites to differ along the dimensions of Structure, Interpersonal Relationships, Educational Climate and Practicality.

Given the nature of the clinical campus curriculum, these findings are of interest in an evaluative sense. The finding of nonsignificant differences between the three training sites with respect to Scientism-Humanism suggests that the learning environment created in the clinical campus elective courses, in general, does not promote as well as expected the psycho-social aspects of medicine. Also of interest is the profile of Site A which is affiliated with the clirical campus program. Of the three training sites, it is the most structured, while at the same time being lowest in terms of interpersonal relationships and educational climate. On the other hand, Site B, also affiliated with the clinical campus received the highest ratings on five of the six learning environment scales. Since Sites A and B differ, in a statistical sense, with respect to both Interpersonal Relations and Educational Climate, closer study of Site B may lead to suggestions on how Site A could be made more congruent with the overall curriculum objectives.

CONCLUSIONS AND IMPLICATIONS

Findings of this study indicate that it is possible to distinguish between educational "sub-environments" within undergraduate medical education. Furthermore, information obtained from such asesssments can provide possible suggestions for optimizing the climate for learning in separate clinical training sites.

Although it is tempting to suggest changes at the clinical training sites in order to provide a learning environment consistent with that of the clinical campus curriculum, past experience with such changes (in response to student evaluations) suggests that subsequent classes may react entirely different to the learning environment. Thus, descriptive information provided by a group of students regarding the the learning environment depends, in part, upon the unique characteristics of the individuals providing the assessment. Future research must therefore focus on the interaction between perceptions of the learning environment and characteristics of the individual learner. Although an abundance of research has been undertaken in the area of the "fit" of an individual to an "environment", a variety of theoretical and methodological problems exist.

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TABLE 1

Subscales and Component Items
for Environmental Assessment Instrument

Scale Label	Component Items
STRUCTURE	The goals and purposes of the work are clearly defined for the student.
	Assignments are usually clear and specific, making it easy for students to plan their studies effectively.
	Students quickly learn what is acceptable and what is not acceptable in this elective.
	Patient responsibility on the part of the student is closely supervised to guard against mistakes.
	Frequent tests are given and oral quizzes are common.
	Feedback is given to the students by the faculty at frequent intervals.
INTERPERSONAL RELATIONS	Faculty members frequently go out of their way to establish friendly relations with students.
	Residents and attendings participate enthusiastically in clinical conferences.
	Faculty members rarely eat with students.
	There is very little group spirit here.
	Personal hostilities are usually concealed or resolved as quickly as possible.

EDUCATIONAL CLIMATE

Faculty members frequently discuss topics which have no apparent relation to the total course.

Much of the clerkship stresses basic science or scholarship and really probes into the fundamentals of the subject.

Faculty members here really push the students' capacities to the limit.

The faculty generally expects the student to know a great deal about his patients.

The faculty rarely encourages a student to read in areas of the student's own interest.

The faculty is very impatient with students who are content to just get by.

PRACTICALITY

Faculty members are very oriented toward practical application in their approach to education.

Very few instructors try to give the student the kind of practical training he will need for the practice of medicine.

The academic atmosphere here is not very helpful to the student who wants to get down to the businness of practicing medicine.

The course stresses the speculative or abstract rather than the concrete and tangible.

ENTHUSIASM

Instructors really get their students interested in their subjects.

Faculty members typically exhibit great interest in and enthusiasm for their special fields of interest.

Many of the faculty seem bored with their

teaching assignments.

SCIENTISM-HUMANISM

The faculty often seems more interested in the scientific aspects of a case than in the welfare of the patient.

The faculty here stresses the study of the patient as a whole person.

There are many facilities and opportunities for individual creative activity.

The faculty here lays great stress on ethical behavior.

In the course the broad social and psychological setting of the patient material is not discussed.

The faculty here try to get the students interested in the humanities or in the broad social context of medicine.

There is a lot of interest in the philosophy and methods of science.

TABLE 2

Scale Means, Standard Deviations, Reliability Coefficients (Cronbach's Alpha), and Subscale Intercorrelations for Subscales of the Environmental Assessment Instrument

Subscale	Scale Mean and SD	Cronbach's α [1]	Subscale Intercorrelations IR	EC	P	E	S-H
Structure (S)	2.80 (.47)	.63 (.74)	.35	.17	.25	.41	.28
Interpersonal Relationships (IR)	3.15 (.50)	.59 (.74)		.25	.47	.53	.66
Educational Climate (EC)	2.91 (.43)	.49 (.62)			.08	.32	.17
Practicality (P)	3.72 (.38)	.52 (.73)				.48	.49
Enthusiasm (E)	3.51 (.45)	.53 (.79)					.54
Scientism-Humanism (S-H)	2.98 (.56)	.83 (.78)					

[1] Alpha stepped-up to 10 items (indicated in parentheses)

TABLE 3

Scale Means, Standard Deviations, and F-statistics for Comparisons Between Three Clinical Training Sites[1]

Scale	Site A (N=33)	Site B (N=16)	Site C (N=18)	F(2,64)
Structure	2.91 (0.39)	2.87 (0.44)	2.52 (0.52)	4.90 *
Interpersonal Relations	3.03 (0.48)	3.43 (0.32)	3.11 (0.55)	3.87 *
Educational Climate	2.74 (0.36)	2.98 (0.40)	3.15 (0.46)	6.22 **
Practicality	3.71 (0.37)	3.89 (0.22)	3.58 (0.44)	2.97 +
Enthusiasm	3.49 (0.50)	3.58 (0.38)	3.46 (0.44)	0.35 (NS)
Scientism-Humanism	2.97 (0.57)	3.17 (0.50)	2.85 (0.58)	1.47 (NS)

* $p < .05$
** $p < .01$
\+ $p < .06$

[1] Sites A and B are affiliated with the primary-care, community-based clinical campus. Site C represents hospital training sites affiliated with an academic-based medical center.